

Measurement of regional gobbling phenology in Missouri

Summary of the 2007 spring data collection period

Jeff Beringer, August 2007

Introduction:

A conservative season timing and harvest structure is an important component of MDC's successful turkey management program. Missouri's turkey season is timed to coincide with the onset of continuous incubation by hens, usually starting around the 3rd week in April. Opening the spring season at this time ensures that all hens have been bred and many are on nests and protected from harvest. The 3rd week opener likely reduces overharvest of male turkeys but may result in reduced gobbling activity. Gobblers can be very vulnerable in early April, and a later season ensures that we don't overharvest this segment of the population.

Gobbling activity is considered by hunters to be an important component of spring turkey hunting. MDC has set the opening date of spring season to coincide with the "2nd peak" of gobbling. This "2nd peak" is generally thought to occur around the onset of continuous incubation by hens and has been supported by research projects in South and North Missouri, however studies in Mississippi and Iowa did not find a 2nd peak of gobbling or a distinct relationship with nesting activity. Recent hunter input from informational meetings, email, letters, post season surveys and phone conversations suggest that many hunters believe that Missouri's turkey season occurs too late in the spring. Hunters often use the phrase "the birds are gobbled out before the season even starts." We are conducting this gobbling phenology study to measure the timing and extent of gobbling activity throughout Missouri. Besides biological insights the study offers a great opportunity collect weather data and measure the effect certain weather parameters have on gobbling. This study is a collaboration between the Conservation Department and the George Clark Chapter of the National Wild Turkey Federation.

Approach:

During 2007, 729 volunteers agreed to collect gobbling data to help us quantify daily and seasonal trends in gobbling activity throughout Missouri, and to determine if spring season timing is related to peak gobbling. Volunteers participating in gobbling counts listened from 15 March through 17 May throughout the state. About 400 participants actually collected data throughout the study. We are still attempting to recruit more listeners to increase our sample size. The gobble count methodology follows:

- Volunteer listeners (gobbleteers) recruited from throughout state via Conservationist magazine, NWTF gobbler publication, Conservation Federation of Missouri publications, and in-person recruitment at NWTF turkey banquets.
- Gobble counts were conducted from 15 March through 17 May.
- Gobble count timing was from 45 minutes before sunrise to 30 minutes before sunrise
- Gobbleteers listened from a location they chose at least 2 times per week (more listening sessions are okay) when winds are 10mph or less and it is not raining.
- The same listening location was used throughout the study.
- Gobbleteers recorded the number of gobbles heard and the number of individual gobblers heard during the listening period.
- Gobbleteers recorded nominal weather conditions: temperature, wind speed, cloud cover, precipitation during the 12 hours prior to the listening event, etc.
- Key plant species first emergence and/or flowering were recorded by regional coordinators.
- Data were post- stratified to state regions and other meaningful scales for analysis.

Objectives:

1. Quantify weekly and seasonal trends in gobbling activity in an attempt to define peaks of gobbling activity throughout Missouri.
2. Correlate gobbling activity with a variety of weather related variables to create a predictive model for hunters to use.
3. Correlate gobbling activity with known harvest data to determine if there is a relationship between gobbling rates and harvest densities.

Data analysis:

While the study will run for 5 years we have conducted some preliminary analysis to look for trends associated with the gobbling data. Drawing conclusions from preliminary data can be dangerous as trends indicated by the gobbling data may change over time as we collect larger sample sizes. At the completion of this 5-year study we will conduct a comprehensive analysis and these results will be statistically valid. Results presented below were those that suggested a relationship and are the result of simple plots and not statistical tests. We also plotted gobbling against a number of weather parameters that showed no correlation and these were not included.

Results:

Gobbling chronology as related to state regions and north/south location

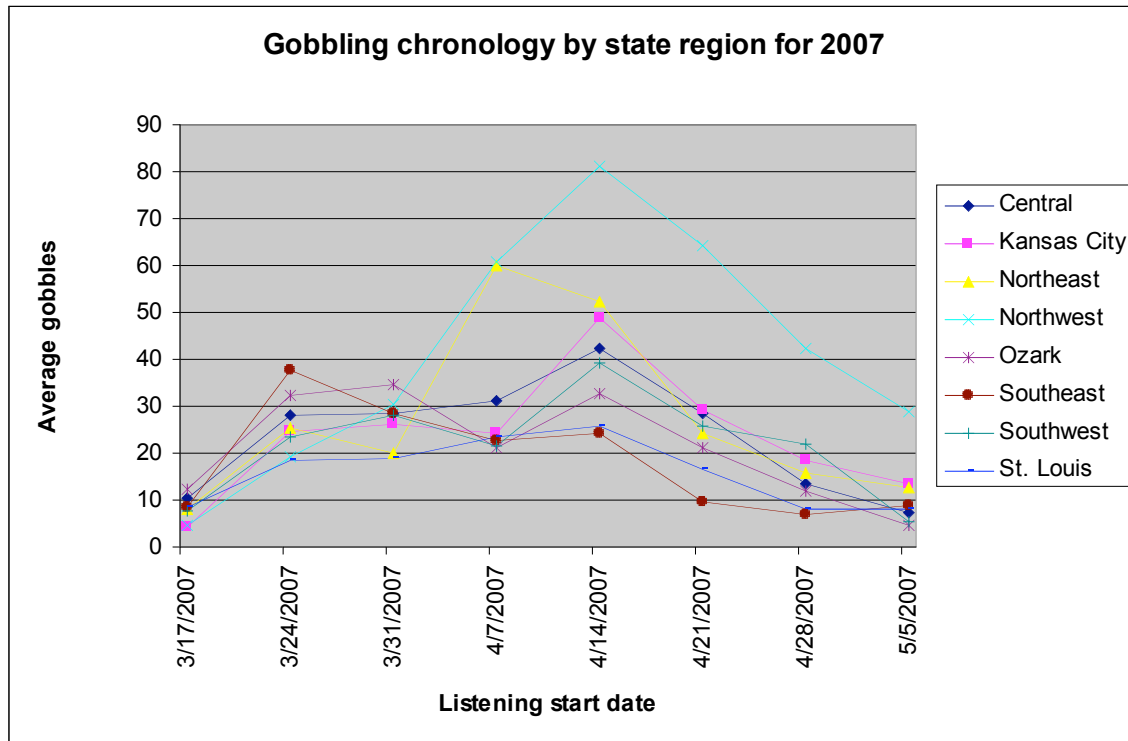


Figure 1. Gobbling frequency by Missouri state regions by study week from 17 March to 15 May, 2007.

Comments: Most regions of the state showed two peaks of gobbling with the first peak near the end of March and the second peak in mid April. Northwest Missouri was the exception here and it had only 1 peak in mid April. I was surprised to see the consistency among regions for gobbling peaks.

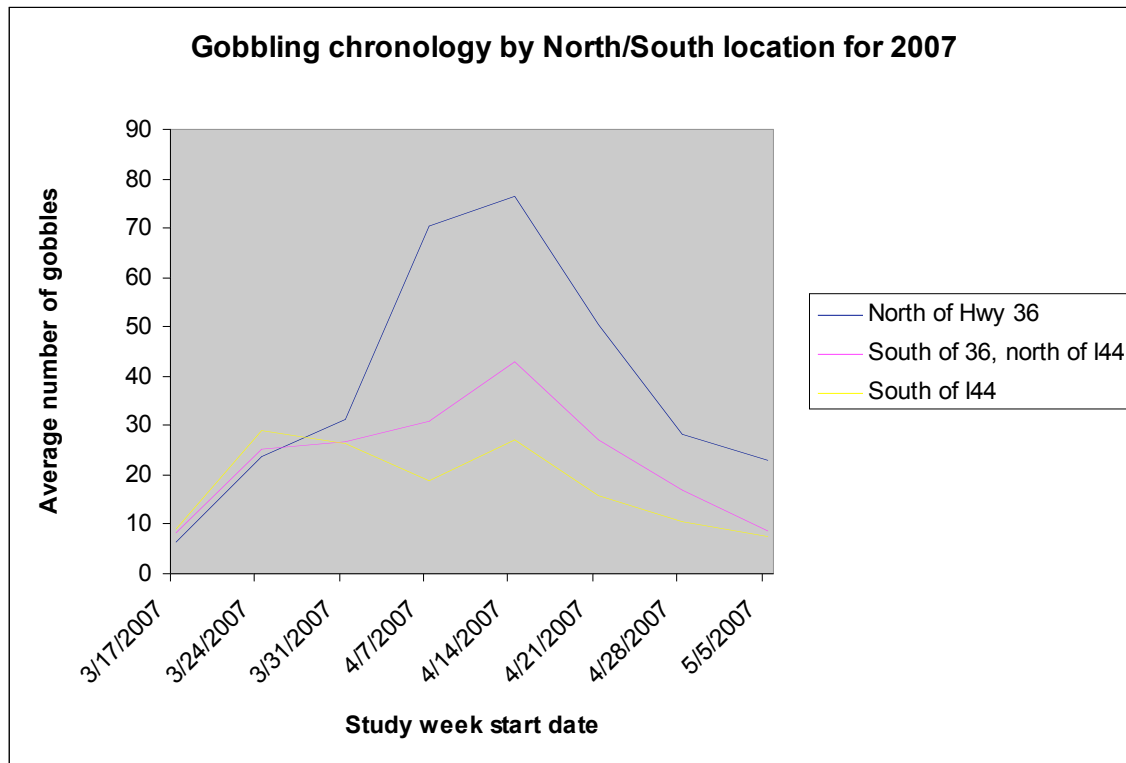


Figure 2. Gobbling frequency by north/south area of Missouri by study week from 17 March to 15 May, 2007.

Comments: These data are similar to the regional gobbling chart except that the data from regions were combined into larger categories to give us a larger sample size. Areas south of highway 36 showed two peaks of gobbling, the first around late March and the second around mid April. The area north of highway 36 showed only 1 peak.

Figure 3. Gobbling frequency by north/south area of Missouri by study week from 17 March to 15 May, 2007.

Comments: This bar graph is representing the same data as show in Figure 2.

Figure 4. Gobbling frequency by Missouri state regions by study week from 17 March to 15 May, 2007.

Comments: This data are similar to Figure 1 except are in bar form and this makes it easier to compare regions. The general form of this graph again suggests that peak gobbling for most regions occurs during mid April.

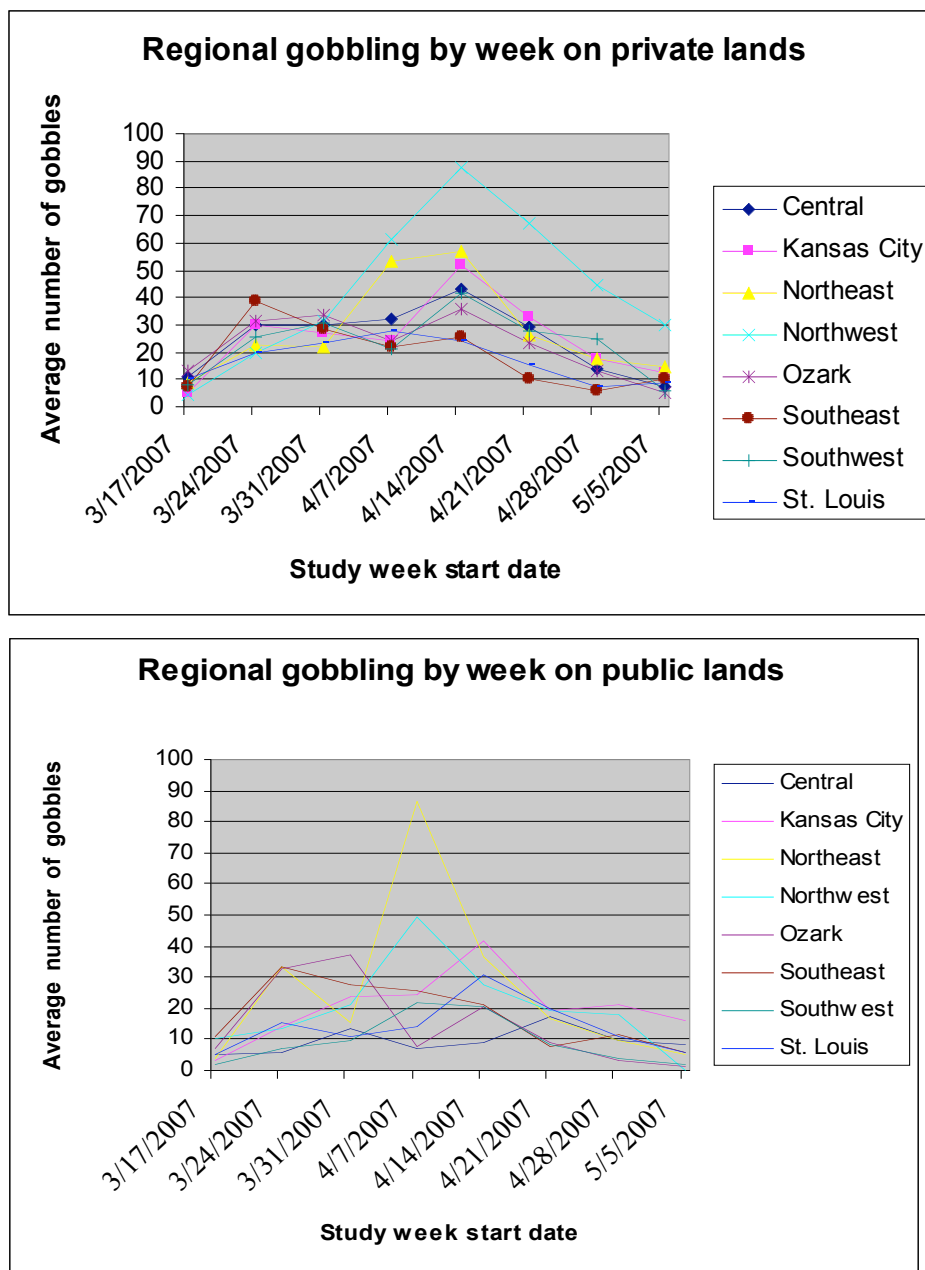


Figure 5. Gobbling frequency on public and private lands by Missouri state regions by study week from 17 March to 15 May, 2007.

Comments: Gobbling chronology is similar on public and private lands however gobbling rates seem higher on private lands and gobbling seems to drop off more rapidly on public lands. This may reflect bird densities and/or hunting pressure.

Figure 6. Gobbling frequency on public and private lands by Missouri state regions by study week from 17 March to 15 May, 2007.

Comments: these are the same data depicted in Figure 5 except that they are in bar graph form.

Gobbling rates and frequency as related to weather parameters:

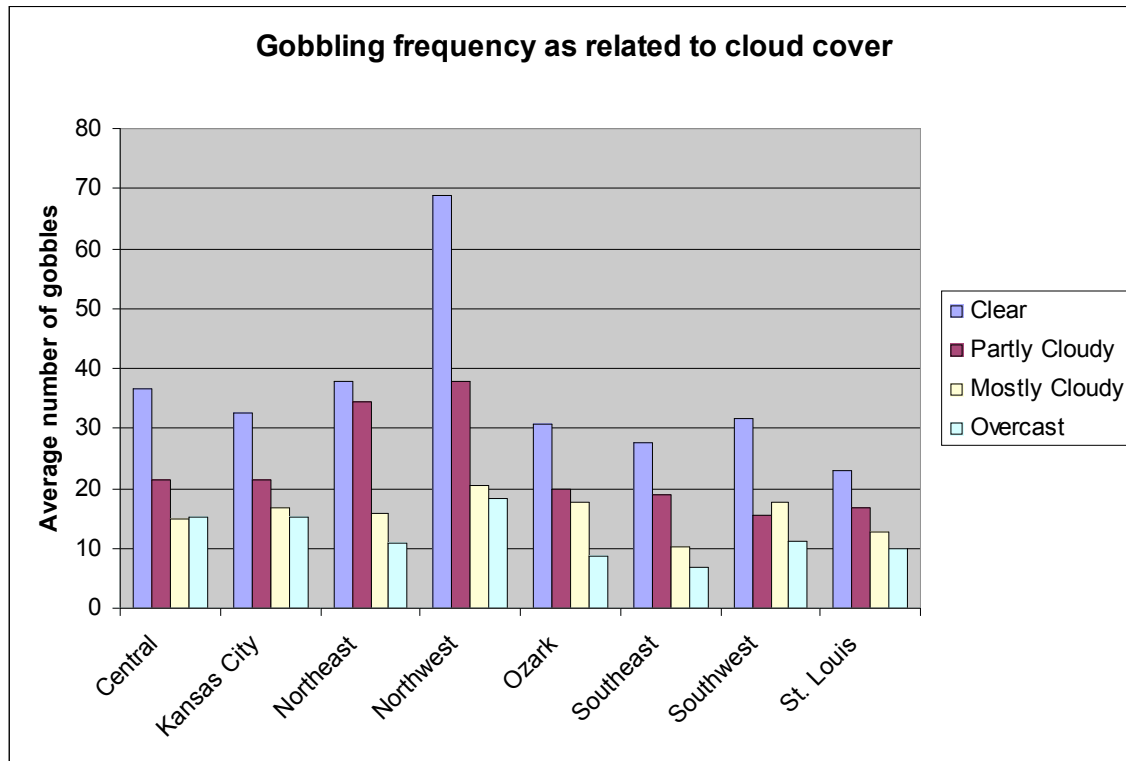


Figure 7. Gobbling frequency by Missouri state regions by study week under various cloud cover conditions from 17 March to 15 May, 2007.

Comments: There appears to be a clear relationship between gobbling frequency and cloud cover. Turkeys were more likely to gobble during days with clear skies, followed by days with partly cloudy skies, mostly cloudy etc.

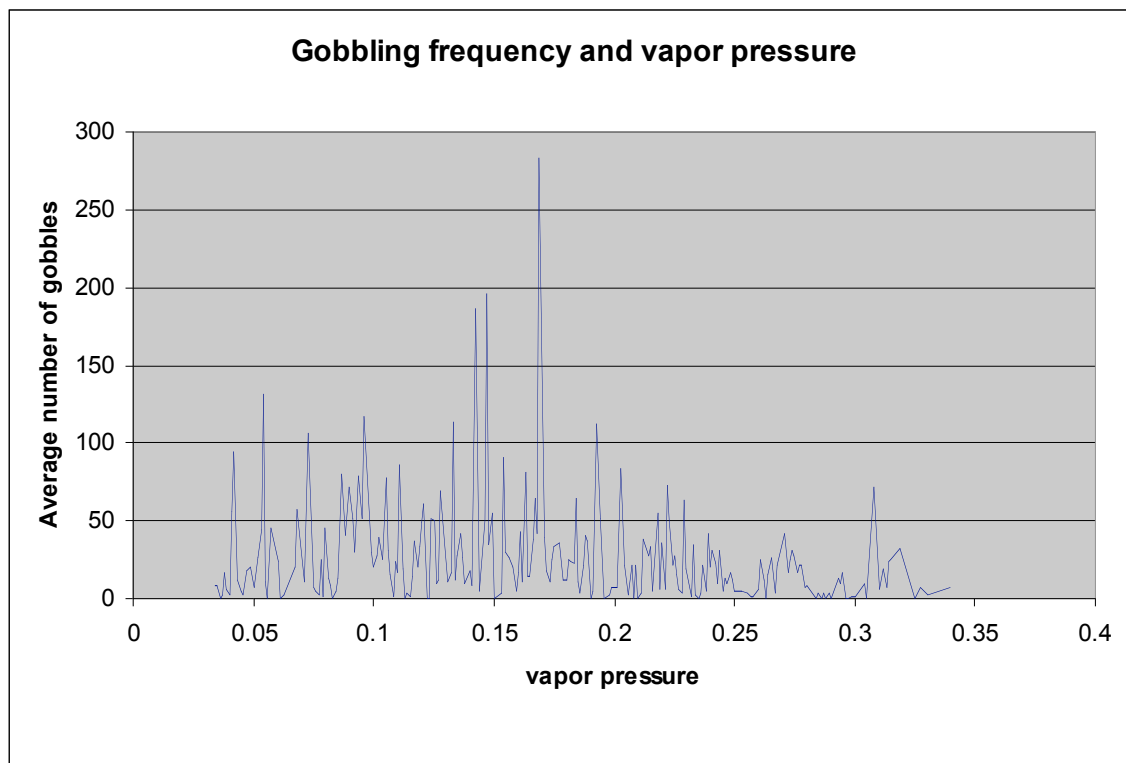


Figure 8. Gobbling frequency by Missouri state regions by study week under various vapor pressure from 17 March to 15 May, 2007.

Comments: Vapor pressure is the pressure exerted by the water vapor molecules in a given volume of air. The ratio of vapor pressure to saturation vapor pressure multiplied by 100 gives the relative humidity of the air in percent. Although not a unconditional relationship it does appear that turkeys are more likely to gobble under certain vapor pressures. What was not accounted for here was the date and vapor pressure – there may be a relationship with gobbling, vapor pressure, and date. This would not be apparent with a rough graph.

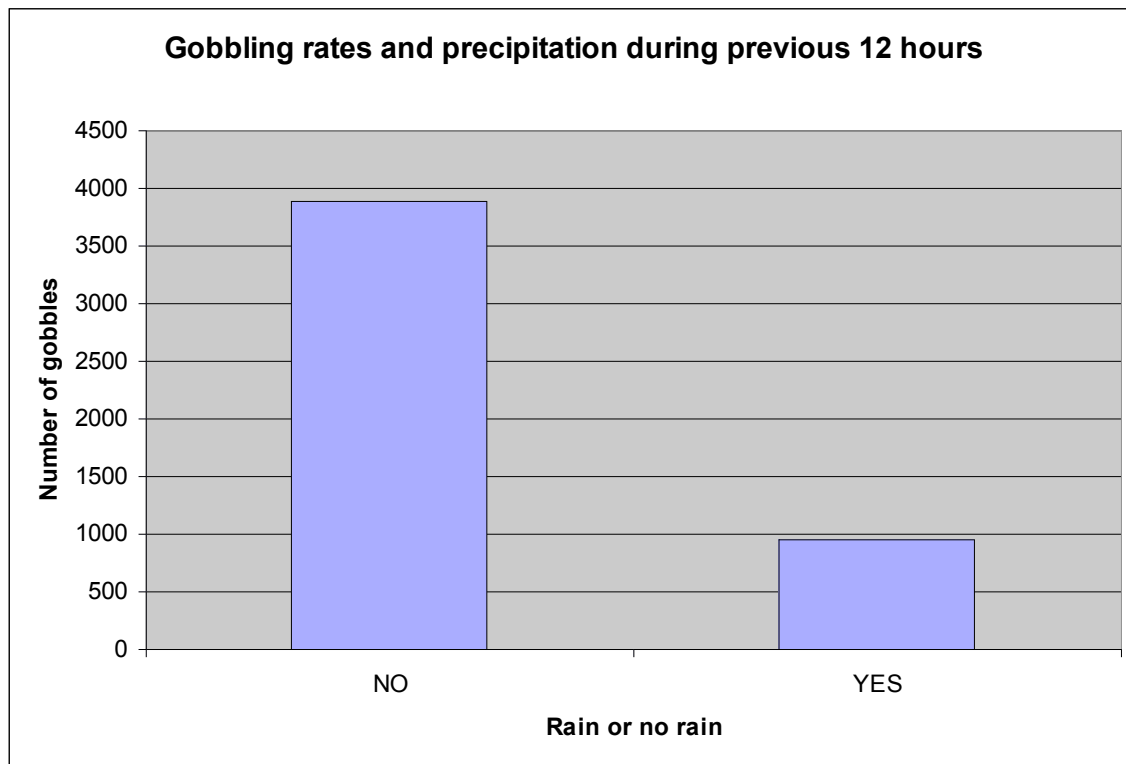


Figure 9. Gobbling frequency as related to precipitation the night before the listening period from 17 March to 15 May, 2007.

Comments:

Turkeys are more likely to gobble on mornings following a dry night as compared to those following rain events. This was one of the strongest relationships evident from the study.

Figure 10. Gobbling frequency by state region as related to precipitation the night before the listening period from 17 March to 15 May, 2007.

Comments: These data are the same as those presented in Figure 9 except these are presented by region. The same relationship was evident when graphed by region.